

Abstract

By uniformly forming an indefinite number of microscopic acicular crystals on a surface of a silicon substrate so as to be perpendicular to the surface of the substrate by plasma CVD method using a catalyst, it is possible to reliably, homogeneously and massively form an ultramicroscopic acicular silicon crystal having a substantial cone shape tapered so as to have a radius of curvature of not less than 1 nm to no more than 20 nm at its tip end and having a diameter of bottom surface of not less than 10 nm, and a height equivalent to or more than the diameter of bottom surface, at a desired location.